Claims

What is claimed is:

1 A method of organizing blocks of memory in a digital computer so as implement an associative memory that, for a given set of Boolean variables, maps Boolean-variable-to-Boolean-value assignments to values stored in the computer memory. Blocks of memory represent instances of class `CFLOBDD` (CFLOBDDs) and instances of class `Grouping` (proto-CFLOBDDs) according to the class definitions given in Figure 12 and Structural Invariants 1-5. The method comprises the following steps:

a. The blocks of memory are connected to form a structure that represents a hierarchically structured graph in which each matched path through the structure (i) corresponds to a unique Boolean-variable-to-Boolean-value assignment, and (ii) leads to an element of the computer memory in which is stored the piece of information associated with that Boolean-variable-to-Boolean-value assignment.

2 The method of claim 1, wherein the connections between blocks of memory are established by the following steps:

a. Create a decision tree that represents the information to be stored in the associative memory, and whose height is an integral power of 2

b. Apply Algorithm 1 to form a multi-terminal CFLOBDD representation in memory.

3 A method for representing groupings and proto-CFLOBDDs in the memory of a computer so that equality of proto-CFLOBDDs can be tested in constant time, comprising the following steps:

a. Allocate a table in which to store the unique representatives of values of type `Grouping`.

b. Use the table to perform memoization during operations that construct values of type `Grouping` in the computer memory, so that only a single representative is ever constructed for each value of type `Grouping`.

c. Determine whether two values of type `Grouping` are equal (and hence whether two proto-CFLOBDDs are equal) by testing whether their addresses in the computer memory are equal.